Association of American State Geologists

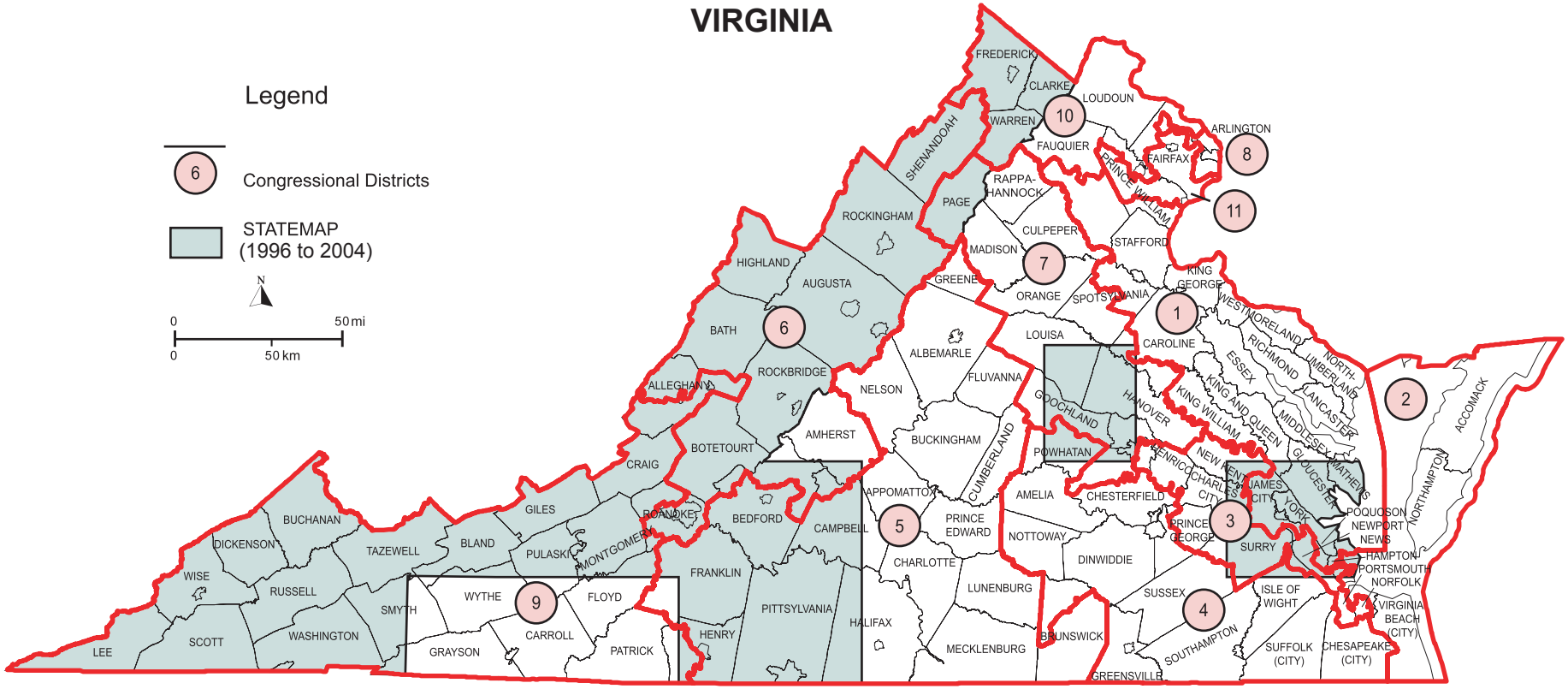
Virginia Department of Mines Minerals and Energy

United States Geological Survey

USGS science for a changing world

National Cooperative Geologic Mapping Program

STATEMAP Component: States compete for federal matching funds for geologic mapping



Contact Information

Virginia Department of Mines, Minerals and Energy
Division of Mineral Resources
State Geologist: Edward E. Erb (434/951-6350)
STATEMAP Contact: Matthew J. Heller (434/951-6351)
http://www.dmme.virginia.gov

United States Geological Survey
Geologic Mapping Program Office
Program Coordinator: Peter T. Lyttle (703/648-6909)
Associate Program Coordinators:
Randall C. Orndorff (703/648-4316)
Laurel M. Bybell (703/648-5281)
http://ncgmp.usgs.gov

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SUMMARY OF STATEMAP GEOLOGIC MAPPING PROGRAM IN VIRGINIA

Fiscal Year	State Dollars	Federal Dollars	Total Project Dollars
1996	$20,702	$20,702	$ 41,404
1997	49,345	49,345	98,690
1998	50,000	50,000	100,000
1999	45,728	45,728	91,456
2000	48,258	48,258	96,516
2001	22,899	22,899	45,798
2002	31,628	31,628	63,256
2003	95,955	95,955	191,910
2004	171,151	171,151	342,302
TOTALS	**$535,666**	**$535,666**	**$1,071,332**

Geologic Maps

Geologic maps show the distribution of bedrock and unconsolidated sediments using colors, lines, and symbols. These maps contain an explanation that describes the composition, texture, and age of the rocks. The locations of important features such as folds and faults are also shown on geologic maps.

Geologic maps provide basic information for land development and conservation projects. Large projects (dams, roads, bridges, and buildings) require detailed geological analysis because of monetary, health, and safety concerns. Smaller projects, such as reservoirs, waste disposal systems, and water wells, also benefit from an understanding of the local geology. Geologic maps are also used for:

- Evaluation of geologic hazards (landslides, earthquakes, land subsidence)
- Planning transportation and utility routes
- Site selection for public facilities (landfills, waste-treatment facilities, waste-disposal sites, schools)
- Land-use planning and evaluation of land-use proposals
- Regulatory decisions
- Environmental assessment and protection planning (underground storage tanks, landfills, aquifer contamination)
- Development and protection of groundwater
- Natural-resource assessment, exploration, development, and management
- Basic earth-science research

I-81 Corridor Project

Interstate Highway 81 (I-81) extends along the Appalachian Valley for 325 miles in western Virginia. It is the longest interstate in Virginia and has 90 interchanges, including intersections with interstates I-66, I-64, and I-77. Since its completion in the 1960s, I-81 has become the “main street” of western Virginia, serving as a corridor for travel, commerce, and development. The Shenandoah and James rivers begin in the north and north-central parts of the Valley. Water from these rivers eventually flows into the Chesapeake Bay.

Water resource location, economic product development, geologic hazard identification**,** natural resource protection, and road and infrastructure development are important issues along the I-81 corridor. Some of these issues are at a critical stage. The need to protect natural resources including rivers, forests, groundwater supplies, and mineral resources increases as development expands.

This project, begun in FY2003, will involve new mapping on approximately 70 quadrangles along and adjacent to the I-81 corridor. A digital geologic map of the entire corridor will be a final product and will provide a valuable resource for the region.

Richmond Metropolitan Statistical Area Project

The Richmond Metropolitan Statistical area (MSA) encompasses 16 counties in the Piedmont and Coastal Plain of Central Virginia. The cities of Richmond, Petersburg, Colonial Heights, and Hopewell are located along interstates I-95, I-64, and I-85. Several major U.S. Highways connect these cities with smaller communities both inside and outside of the MSA. The Richmond MSA contains significant portions of three river basins. The lower portions of the York and James rivers flow through the area and into the Chesapeake Bay. The headwaters of the Chowan river ultimately flow into the Albemarle-Pamlico estuary.

The population of the Richmond MSA is expected to grow approximately 35% by 2030. Almost all of this growth is expected to occur outside of existing city boundaries. As a result, the Richmond MSA will need geologic information to locate water resources and aggregate, minimize the impact of geologic hazards, decrease the cost of road and infrastructure development, and enhance natural resource protection.

This project, which will begin in 2005, will target areas of dense development, high growth, and geologic resource or hazard potential. It will require mapping of approximately 45 quadrangles. A digital geologic map of these areas will be a final product and will provide a valuable resource for the region.

Statement of Outcome from a Recent STATEMAP project

The City of Harrisonburg is rapidly developing. As a result of this growth, traffic congestion in the city has increased significantly. In an effort to reduce traffic on existing roads, the Virginia Department of Transportation (VDOT) is planning a bypass. Several alternate routes are being considered. A significant portion of the area is underlain by limestone and dolostone formations that have developed karst. Citizens in the area and outside organizations have expressed concern that the construction and use of the bypass and future development along it may significantly impact karst systems and negatively affect water quality and habitat. As a result of these concerns, VDOT has collected data related to karst along the proposed routes. VDOT is currently using the digital geologic compilation we provided through our 2003-2004 STATEMAP project to identify the location and structure of limestone and dolostone formations. This data is being used in combination with other datasets to help determine the best route for the bypass.